This listing of claims is intended as the current listing of claims and will replace all prior versions and listings, of claims in the application:

1. (Currently Amended): A method for protein-DNA crosslinking ~~labeling nucleic acids~~, the method comprising:

a) contacting ~~nucleic acid~~ DNA molecules with hydrogen peroxide and phenanthroline-Cu(II) for a time and at concentrations sufficient to produce ~~nucleic acid~~ DNA single strand scission and free-aldehyde moieties on either the 5' or 3' end of the molecules at the site of scission;

b) reacting the aldehyde moieties with amine to produce a condensation product; and

c) labeling the condensation product such that 90 percent of the crosslinking occurs at the 5'-end or the 3'-end of the DNA molecules.

2. (original): The method as recited in claim 1 wherein the step of labeling the condensation product further comprises:

a) reducing the condensation product; and

b) contacting the reduced condensation product with a chromophore.

3. (Canceled)

4. (original): The method as recited in claim 1 wherein the amine is a primary amine.

5. (original): The method as recited in claim 1 wherein the amine is ethylene diamine or hydrazine or aminated biotin.

6. (original): The method as recited in claim 1 wherein the contacting step occurs in an anaerobic environment.

7. (original): The method as recited in claim 1 wherein the step of labeling the condensation product further comprises reducing the condensation product and cross-linking the reduced condensation product with a label in one reaction step.

8. (Previously Presented): The method as recited in claim 1 wherein the step of contacting the nucleic acid molecules with phenanthroline-Cu(II) includes contacting the nucleic acid with a denaturing agent.

9. (Currently Amended): A method for protein-DNA crosslinking ~~modifying nucleic acids~~, the method comprising:

a) producing free radicals by reacting hydrogen peroxide with phenanthroline-Cu(II).

b) contacting the produced free radicals with ~~the nucleic acids~~ DNA molecules to produce single stranded scission-free nucleic acid bases and aldehyde forms of ribose and deoxyribose at either the 5' ends or 3' ends at the site of scission;

c) contacting the aldehyde forms with an amine to produce a condensation product;

d) reducing the condensation product; and

e) labeling the reduced condensation product , such that 90 percent of the crosslinking occurs at the 5'-end or the 3'-end of the DNA molecules.

10. (Canceled)

11. (Canceled)

12. (Previously Presented): The method recited in claim 9 wherein steps d and e occur simultaneously.

13. (Previously Presented): The method recited in claim 9 wherein step e occurs in anaerobic conditions.

14. (Currently Amended): The method as recited in claim 9 wherein the ~~nucleic acid~~ DNA is double stranded and wherein the step of contacting the free radicals with the nucleic acids is preceded by the addition of a double-strand weakening agent.

15. (original): The method as recited in claim 14 wherein the double-strand weakening agent is a denaturing agent selected from the group consisting of carbonic acid, urea, ethyl carbonate, cyanamide, urethane, and combinations thereof.

16. (Currently Amended): The method as recited in claim 9 wherein the ~~nucleic acid~~ DNA is modified at temperatures below the boiling point of water.

17. (Currently Amended): The method as recited in claim 9 wherein the ~~nucleic acid modification~~ crosslinking occurs at between 0 °C and 95 °C.

18. (Currently Amended): The method as recited in claim 9 wherein the free radicals are contacted with the ~~nucleic acids~~ DNA in an anaerobic atmosphere.

19. (New) The method as recited in claim 1 wherein the coordination complex is 1,10-phenanthroline-Cu(II).

20. (New) The method as recited in claim 9 wherein the free radicals are produced by reacting hydrogen peroxide with 1,10-phenanthroline Cu(II).